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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|----------------------|------------------|
| 10/677,578 | 10/02/2003 | David L. Churchill | 115-007 | 9298 |
| 26542 | 7590 | 10/05/2005 | EXAMINER | |
| JAMES MARC LEAS 37 BUTLER DRIVE S. BURLINGTON, VT 05403 | | | WHITTINGTON, KENNETH | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2862 | |
| DATE MAILED: 10/05/2005 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|------------------------------------|----------------------------------|--|
| Office Action Summary | Application No. 10/677,578 | Applicant(s) CHURCHILL ET AL. | |
| | Examiner Kenneth J. Whittington | Art Unit 2862 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 and 33-36 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 28-31, 33 and 44 is/are allowed.
- 6) ☒ Claim(s) 1-10, 15-25, 27 and 36 is/are rejected.
- 7) ☒ Claim(s) 11-14 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

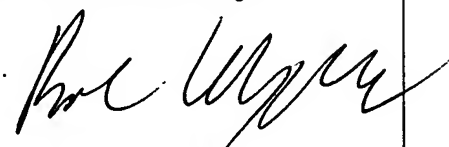
Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.



**Bot Ledyhh
Primary Examiner**

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

The After Final Amendment filed on September 20, 2005 has been entered and considered. In view of the oversight of claim 35 which was inadvertently indicated as allowable, the allowability of this claim and the finality of the rejections are withdrawn.

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Claim Objections

Claim 26 is objected to because of the following informalities: on line 2, "in inside diameter" should be replace by "the inside diameter". Appropriate correction is required.

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Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

21

Claims 1-10, 15, 18-23, 25, 27 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al. (US 4,347,492), hereinafter Davis. Regarding claims 1-6, Davis teaches a transducer cartridge comprising a housing holding a sensor said housing having an inner surface with a dimension (See Davis FIG. 2), said sensor including a coil having an inside dimension and a captive core (See FIG. 2, items 11 and

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9), wherein an electrical measurement of said coil provides information about displacement or velocity of said captive core (See col. 1, lines 5-9), further wherein said coil has an axis extending in a first direction (See FIG. 2), said housing comprising a support for the captive core (See FIG. 2), wherein the inside surface dimension of the housing is greater than the inner surface of the coil (See FIG. 2), the support includes first and second bearings mounted in or connected to the housing, each having a length of contact with the core, the length of contact of each core being less than the stroke length (See FIG. 2, items 6' and 5, note bearings balls 5 on each side of the core, the contact with the bearing being less than the overall stroke length).

However, Davis does not explicitly teach the dimensions of the device as recited in claims 1-6. Nonetheless, modifying Davis to have the relative dimensions as recited in the claims would be obvious to one having ordinary skill in the art through routine experimentation because where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device. See *Gardner v. TEC Systems, Inc.*, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 225 USPQ 232

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(1984). One having ordinary skill would thus be motivated to do in view of Davis, which recognized a need for a small sized transducer (See col. 1, lines 16-57).

Regarding claim 7, Davis teaches the captive core extending into said coil (see FIG. 2).

Regarding claim 8, Davis teaches the captive core having a
7 first portion having a first diameter (See FIG. 2, item 12), wherein said captive core further includes a second portion having a diameter greater than said first diameter for retaining said core within said housing (See FIG. 2, item 15, note that the core, in conjunction with the bearings and housing provides a stop to prevent the core from being removed from the housing).

Regarding claim 9, Davis teaches the first bearing being
14 connected to said housing, wherein the core slides within a hole in said first bearing (See FIG. 2, note bearings 6' with inserts 17 are mounted in housings).

Regarding claim 10, Davis teaches second bearing is mounted to said housing (See items 6'), wherein said core slides within a first hole in said first bearing and within a second hole in said second bearing (See FIG. 2).

21 Regarding claim 15, Davis teaches the sensor being an induction sensor or eddy current sensor (See title of Davis).

Regarding claim 18, Davis teaches the sensor being a three coil device (See FIG. 2, item 11).

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Regarding claim 19, Davis teaches the sensor comprising a return spring (See FIG. 2, item 14).

Regarding claim 20, Davis teaches the core extending through said spring and into said coil (See FIG. 2).

Regarding claims 21 and 22, Davis teaches the core including a ferromagnetic material (See FIG. 1, item 9), made
7 from a soft iron (ferrite, see col. 1, line 27).

Regarding claim 23, Davis teaches the core further comprising a contact point for making contact with an object to be measured, wherein said contact point is made of a hard material that resists wear (See FIG. 2, item 1).

Regarding claim 25, Davis teaches a core stop to capture said core within said housing, wherein said core stop further
14 limits extension of said spring (See FIG. 2, note that core portion 15 acts as a core stop that interacts with the bearings and the housing to prevent movement from the housing).

Regarding claim 27, Davis teaches lead wires electrically connected to said coil and extending to a circuit (See FIG. 2).

Regarding claim 36, Davis teaches said core extending out from said housing from said first bearing (See FIG. 2), wherein
21 said second bearing is spaced a distance from said first bearing to provide resistance to lateral forces on said core where it extends from said housing while allowing free axial movement of said core (See FIG. 2).

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Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis as applied to claims 1 and 15 above, and further in view of Admission (page 6 of Specification, lines 8-9). Davis teaches each and every limitation of claims 1 and 15 as noted above. However, this combination teaches of a three-coil design. Nonetheless, it would have been obvious to use a one or two coil design, because as admitted by Applicant, using one, two or three coils in such a device are well known in the art alternatives (See Specification page 6, lines 8-9). Thus, one having ordinary skill would be motivated to use any of the coil designs depending on the particular requirements of the system.

14

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis as applied to claims 1 and 23 above, and further in view of Sturdevant (US 5,414,940). Davis does not explicitly disclose the hardened tip material, other than a hard material. Sturdevant teaches using a ruby tip for in a contact position sensor (See FIG. 1, item 14). It would have been obvious to use the ruby tip of Sturdevant because as is well known in the art, ruby material is sufficiently hard enough that it will not wear after extended use.

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Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuboi (US 6,573,686) in view of ordinary skill in the art. Tsuboi teaches an array of displacement sensors providing displacement measurements. However, Tsuboi does not explicitly teach any specific spacing between sensors. Nonetheless, modifying Tsuboi to have the relative dimensions as recited in the claims would be obvious to one having ordinary skill in the art through routine experimentation because where the where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device. See *Gardner v. TEC Systems, Inc.*, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 225 USPQ 232 (1984).

Allowable Subject Matter

Claims 28-31, 33 and 34 are allowed.

The following is an examiner's statement of reasons for allowance: claims 28-34 are allowed for the same reasons as identified in the Final Office Action dated June 21, 2005.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

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fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims 11-14 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base
7 claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 11, the prior art does not teach a second bearing mechanically connected to the core, in combination with the other features of the claim and the claims from which it depends. Claims 12-14 have allowable subject matter for the
14 same reasons because of their dependency to claim 11.

Regarding claim 26, the prior art does not teach the core stop having an outside diameter approximately equal to the inside diameter of the coil, in combination with the other features of the claim and the claims from which it depends.

Response to Arguments

21 In the Amendment, Applicant noted that claim 1 now amended includes those features of claim 28 that made claim 28 allowable. However, it was the dimensions of the bearings in combination with the other features of the claim, i.e., the

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structural features of the bearings also included in claim 28 that made claim 28 allowable. In view of such, claim 1 as amended with only dimensional features and no structure features of the bearings does not overcome the prior art as noted in the rejections noted above.

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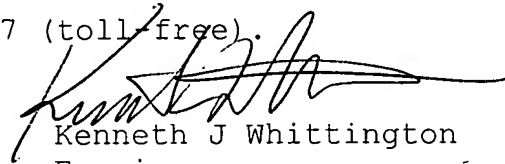
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J. Whittington whose telephone number is (571) 272-2264. The examiner can normally be reached on Monday-Friday, 7:30am-4:00pm.

14 If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kenneth J Whittington
Examiner
Art Unit 2862

kjw